

CLAIMS

What is claimed is:

1. A dynamoelectric machine comprising:

a rotor composed of more than two flux carrying segments, each segment having $P/2$ claw poles, wherein P is an even number; and

n independent sets of three-phase stator windings inserted in a plurality of slots defining a stator, each set of three-phase windings shifted from each other by $\pi/(3n)$ radians.

2. The machine of claim 1, said each set of three-phase windings is operably connected to a corresponding three-phase rectifier.

3. The machine of claim 1, wherein a coil winding is disposed intermediate each of said more than two flux carrying segments.

4. The machine of claim 3, wherein each coil winding is energized providing a first magnetic polarity on outbound claw poles defining said rotor and a second polarity opposite said first polarity on claw poles intermediate said outbound claw poles.

5. The machine of claim 1, wherein permanent magnets are disposed between said each segment to enhance at least one of output and efficiency.

6. The machine of claim 1, wherein n is a positive integer greater than 1.

7. The machine of claim 1, wherein said plurality of slots is defined by $3nP$.

8. The machine of claim 1, wherein when $n=2$, said stator includes two sets of three-phase windings each connected to a corresponding three-phase rectifier, each of the two sets of stator windings are shifted by 30 electrical degrees relative to each other, and said stator is defined by 72 slots.

9. The machine of claim 8, wherein said rotor includes at least one of a 12 pole rotor where $P=12$ and a claw pole rotor having three segments.

10. The machine of claim 8, wherein said each of the two sets of stator windings is inserted such that each phase is spaced six slots apart from contiguous phases of said each of the two sets of stator windings.

11. An alternating current (AC) generator for a motor vehicle comprising:
a field rotor composed of more than two flux carrying segments, each segment having $P/2$ claw poles, wherein P is an even number; and
 n independent sets of three-phase stator windings inserted in a plurality of slots defining a stator, each set of three-phase windings shifted from each other by $\pi/(3n)$ radians.

12. The generator of claim 11, wherein said each set of three-phase windings is operably connected to a corresponding three-phase rectifier.

13. The generator of claim 11, wherein a field coil winding is disposed intermediate each of said more than two flux carrying segments.

14. The generator of claim 13, wherein each field coil winding is energized providing a first magnetic polarity on outbound claw poles defining said field rotor and a second polarity opposite said first polarity on claw poles intermediate said outbound claw poles.

15. The generator of claim 11, wherein permanent magnets are disposed between said each segment to enhance at least one of output and efficiency.

16. The generator of claim 11, wherein n is a positive integer greater than 1.

17. The generator of claim 11, wherein said plurality of slots is defined by $3nP$.

18. The generator of claim 11, wherein when $n=2$, said stator includes two sets of three-phase windings each connected to a corresponding three-phase rectifier, each of the two sets of stator windings are shifted by 30 electrical degrees relative to each other, and said stator is defined by 72 slots.

19. The generator of claim 18, wherein said field rotor includes at least one of a 12 pole rotor where $P=12$ and configured as a claw pole rotor having three segments.

20. The generator of claim 18, wherein said each of the two sets of stator windings is inserted such that each phase is spaced six slots apart from contiguous phases of said each of the two sets of stator windings.